Aust. Soc. Parasitol. (1987), Armidale, 29 Sept - 2 Oct.

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FRESHWATER AMOEBAE OF THE RIVER MURRAY BASIN

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Information on the taxa of protozoa occurring in Australia is sparse and fragmentary; the majority of studies having been performed on those species which are parasitic and pathogenic to vertebrate hosts. Few studies have been carried out on free-living or symbiotic species and a diverse range of aquatic and terrestrial habitats remains to be explored. Free-living species have been incorporated into many ecological and biological studies overseas but similar studies have yet to be conducted in Australia. Nevertheless, preliminary studies have been performed on certain free-living species which have been found to be opportunistic pathogens in vertebrates.

The Australian Biological Resources Study is currently funding a survey of protozoa in the River Murray-Darling Basin; a river system which drains one seventh of the continent of Australia. River flow in the Basin has been regulated by a combination of reservoirs, lakes and weirs to retain water for release during summer months for irrigation and domestic use. The artificial creation of large slow-flowing water bodies subject to increasing pollution by organic matter has provided ideal habitats and growth conditions for many protozoan organisms; including amoebae.

During 1987, fifty sites were selected at 50 km intervals along the River Murray and water and sediment samples were collected by sieving, coring, plankton net tows or by retrieving natural and artificial substrates. Subsamples were plated onto non-nutrient agar seeded with *E. coli* and the cultures incubated at 20°C, 30°C and 42°C for 3-7 days. Motile and encysted amoebae were identified by light microscopy using conventional taxonomic keys. A total of 23 genera of 'naked' amoebae (i.e. those without tests) were identified in the samples. These genera included *Acanthamoeba*, *Amoeba*, *Cashia*, *Cochliopodium*, *Echinamoeba*, *Gocevia*, *Hartmannella*, *Mayorella*, *Naegleria*, *Nuclearia*, *Oscillosignum*, *Paratetramitus*, *Platyamoeba*, *Polychaos*, *Ripidomyxa*, *Saccamoeba*, *Sappinia*, *Thecamoeba*, *Trichamoeba*, *Vahlkampfia*, *Vampyrella*, *Vannella* and *Vexillifera*. Many findings constitute new records for the fauna of Australia and type cultures of individual species are being lodged with established reference collections. It is notable that the genera *Acanthamoeba*, *Naegleria* and *Vexillifera* (some species of which are opportunistic pathogens of mammals and fish) were widespread throughout this heavily-populated and intensively-farmed river basin.

This investigation represents the first comprehensive examination of one of Australia's major water resources for protozoa. The significance of these findings in relation to future ecological and biological studies (including water quality evaluation, pollutant monitoring, toxicity testing and waste-water management) remains to be determined.